

APPL NO:
DATE: 07/14/2005

Dialog-search
09/737035

SEARCH STRATEGY

Set	Items	Description
S1	92189	(GROUP??? OR CLUSTER???) (3N) (LOANS OR ASSETS)
S2	12956	(UNDERWRIT??? (3N) (LOANS OR ASSETS))
S3	4025060	SEARCH
S4	802	(UNDERWRIT??? (3N) (LOANS OR ASSETS)) AND ((CLUSTER??? OR - GROUP???) (3N) (LOANS OR ASSETS))
S5	1814	((ASSIGN??? OR EVALUAT???) (5N) VALUE) (5N) (LOANS OR ASS- ETS)
S6	20	S4 AND S5
S7	16	RD S6 (unique items)
S8	0	S7 AND PY<2000

FILES SEARCHED

SHOW FILES

File 15:ABI/Inform(R) 1971-2005/Jul 14
(c) 2005 ProQuest Info&Learning

File 9:Business & Industry(R) Jul/1994-2005/Jul 13
(c) 2005 The Gale Group

File 810:Business Wire 1986-1999/Feb 28
(c) 1999 Business Wire

File 275:Gale Group Computer DB(TM) 1983-2005/Jul 14
(c) 2005 The Gale Group

File 476:Financial Times Fulltext 1982-2005/Jul 14
(c) 2005 Financial Times Ltd

File 610:Business Wire 1999-2005/Jul 14
(c) 2005 Business Wire.

File 624:McGraw-Hill Publications 1985-2005/Jul 14
(c) 2005 McGraw-Hill Co. Inc

File 636:Gale Group Newsletter DB(TM) 1987-2005/Jul 13
(c) 2005 The Gale Group

File 621:Gale Group New Prod.Annou.(R) 1985-2005/Jul 14
(c) 2005 The Gale Group

File 613:PR Newswire 1999-2005/Jul 14
(c) 2005 PR Newswire Association Inc

File 813:PR Newswire 1987-1999/Apr 30
(c) 1999 PR Newswire Association Inc

File 16:Gale Group PROMT(R) 1990-2005/Jul 13
(c) 2005 The Gale Group

File 160:Gale Group PROMT(R) 1972-1989
(c) 1999 The Gale Group

File 634:San Jose Mercury Jun 1985-2005/Jul 13
(c) 2005 San Jose Mercury News

File 148:Gale Group Trade & Industry DB 1976-2005/Jul 14
(c)2005 The Gale Group

File 20:Dialog Global Reporter 1997-2005/Jul 14
(c) 2005 The Dialog Corp.

File 35:Dissertation Abs Online 1861-2005/Jun
(c) 2005 ProQuest Info&Learning

File 583:Gale Group Globalbase(TM) 1986-2002/Dec 13
(c) 2002 The Gale Group

File 65:Inside Conferences 1993-2005/Jul W2
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File 2:INSPEC 1969-2005/Jul W1
(c) 2005 Institution of Electrical Engineers

File 474:New York Times Abs 1969-2005/Jul 13
(c) 2005 The New York Times

File 475:Wall Street Journal Abs 1973-2005/Jul 13
(c) 2005 The New York Times

File 99:Wilson Appl. Sci & Tech Abs 1983-2005/Jun
(c) 2005 The HW Wilson Co.

File 348:EUROPEAN PATENTS 1978-2005/Jun W04
(c) 2005 European Patent Office

File 349:PCT FULLTEXT 1979-2005/UB=20050707,UT=20050630
(c) 2005 WIPO/Univentio

File 347:JAPIO Nov 1976-2005/Feb(Updated 050606)

(c) 2005 JPO & JAPIO

?

APPL NO:

DATE: 07/14/2005

SEARCH STRATEGY

Set	Items	Description
-----	-------	-------------

S1	92189	(GROUP??? OR CLUSTER???) (3N) (LOANS OR ASSETS)
----	-------	---

S2	12956	(UNDERWRIT??? (3N) (LOANS OR ASSETS))
----	-------	---------------------------------------

S3	4025060	SEARCH
----	---------	--------

S4	802	(UNDERWRIT??? (3N) (LOANS OR ASSETS)) AND ((CLUSTER??? OR - GROUP???) (3N) (LOANS OR ASSETS))
----	-----	--

S5	1814	((ASSIGN??? OR EVALUAT???) (5N) VALUE) (5N) (LOANS OR ASS- ETS)
----	------	--

S6	20	S4 AND S5
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S7	16	RD S6 (unique items)
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S8	0	S7 AND PY<2000
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FILES SEARCHED

7/3,K/1 (Item 1 from file: 148)
 DIALOG(R)File 148:Gale Group Trade & Industry DB
 (c)2005 The Gale Group. All rts. reserv.

16674580 SUPPLIER NUMBER: 111306869 (USE FORMAT 7 OR 9 FOR FULL TEXT
)

Financial and business statistics.
 Federal Reserve Bulletin, 89, 11, A1(68)
 Nov, 2003
 ISSN: 0014-9209 LANGUAGE: English RECORD TYPE: Fulltext
 WORD COUNT: 20998 LINE COUNT: 10019

... pp. A17-19 are
 adjusted to remove the estimated effects of mergers between these two
 groups . The adjustment for mergers changes past levels to make them
 comparable with current levels. Estimated...

50	50	50		
15 Short sales		55	65	50

(1.) In July 1976 a financial group , composed of banks and insurance
 companies, was added to the group of stocks on which...converted.

(8.) Includes participation loans as well as whole loans.

(9.) Includes conventional and government- underwritten loans . The
 Federal Home Loan Mortgage Corporation's mortgage commitments and
 mortgage transactions include activity under...

7/3,K/2 (Item 2 from file: 148)
 DIALOG(R)File 148:Gale Group Trade & Industry DB
 (c)2005 The Gale Group. All rts. reserv.

15604299 SUPPLIER NUMBER: 98755074 (USE FORMAT 7 OR 9 FOR FULL TEXT)

Financial and business statistics.(Illustration)
 Federal Reserve Bulletin, 89, 2, A1(69)
 Feb, 2003
 DOCUMENT TYPE: Illustration ISSN: 0014-9209 LANGUAGE: English
 RECORD TYPE: Fulltext
 WORD COUNT: 21567 LINE COUNT: 09927

...	industries (14)	6.93	6.73	6.93	6.88
-----	-----------------	------	------	------	------

Rating group					
28	Aaa (15)	6 .37	6.15	6.15	6.32
29	Aa	6.84	6.63	6.63...	issues, all
	industries (14)	7.00	6.93	6.81	

Rating group				
28	Aaa (15)	6 .39	6.32	6.22
29	Aa	6.78	6.72	6.64
30	A...loans as well as whole loans.			

(9.) Includes conventional and government-underwritten loans. The
 Federal Home Loan Mortgage Corporation's mortgage commitments and
 mortgage transactions include activity under mortgage securities
 swap programs...

7/3,K/3 (Item 3 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB
(c)2005 The Gale Group. All rts. reserv.

14960916 SUPPLIER NUMBER: 91213347 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Financial and business statistics. (Statistical Data Included)
Federal Reserve Bulletin, 88, 8, A1(69)
August, 2002
DOCUMENT TYPE: Statistical Data Included ISSN: 0014-9209
LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 24257 LINE COUNT: 12116

... 50
15 Short sales 65 50

(1.) In July 1976 a financial group, composed of banks and insurance companies, was added to the group of stocks on which the index is... share issue of conversions from one fund to another in the same group.

(3.) Excludes sales and redemptions resulting from transfers of shares into or out of money market mutual funds... participation loans as well as whole loans.

(9.) Includes conventional and government-underwritten loans. The Federal Home Loan Mortgage Corporation's mortgage commitments and mortgage transactions include activity under mortgage securities swap...

7/3,K/4 (Item 4 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB
(c)2005 The Gale Group. All rts. reserv.

14600582 SUPPLIER NUMBER: 86128852 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Financial and business statistics. (tables) (Statistical Data Included)
Federal Reserve Bulletin, 88, 5, A1(75)
May, 2002
DOCUMENT TYPE: Statistical Data Included ISSN: 0014-9209
LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 23733 LINE COUNT: 10891

... of conversions from one fund to another in the same group.

(3.) Excludes sales and redemptions resulting from transfers of shares into or out of money market mutual funds within the... as well as whole loans.

(9.) Includes conventional and government-underwritten loans. The Federal Home Loan Mortgage Corporation's mortgage commitments and mortgage transactions include activity under mortgage securities swap programs, whereas...

7/3,K/5 (Item 5 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB
(c)2005 The Gale Group. All rts. reserv.

13700592 SUPPLIER NUMBER: 76403695 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Financial and Business Statistics. (industry information and data) (Brief Article) (Industry Overview) (Statistical Data Included)
Federal Reserve Bulletin, 86, 11, A1
Nov, 2000
DOCUMENT TYPE: Brief Article Industry Overview Statistical Data Included
ISSN: 0014-9209 LANGUAGE: English RECORD TYPE: Fulltext
WORD COUNT: 25293 LINE COUNT: 12564

... distributions and share issue of conversions from one fund
to another in the same group.

(3
.) Excludes sales and redemptions resulting from transfers of shares
into or out of money market...
Includes participation loans as well as whole loans.

(9.) Includes conventional and government-underwritten loans.
The Federal Home Loan Mortgage Corporation's mortgage commitments
and mortgage transactions include activity under mortgage
securities...

7/3,K/6 (Item 1 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
(c) 2005 WIPO/Univentio. All rts. reserv.

00816848 **Image available**

CROSS CORRELATION TOOL FOR AUTOMATED PORTFOLIO DESCRIPTIVE STATISTICS
OUTIL DE CORRELATION CROISEE POUR STATISTIQUES DESCRIPTIVES AUTOMATISEES
CONCERNANT DES PORTEFEUILLES

Patent Applicant/Assignee:

GE CAPITAL COMMERCIAL FINANCE INC, 201 High Ridge Road, Stamford, CT
06927-5100, US, US (Residence), US (Nationality)

Inventor(s):

EDGAR Marc T, 1015 Foxwood Drive, Clifton Park, NY 12065, US,
JOHNSON Christopher D, 17 Berkshire Drive W, Clifton Park, NY 12065, US,

Legal Representative:

BENINATI John F (et al) (agent), General Electric Company, 3135 Easton
Turnpike W3C, Fairfield, CT 06431, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200150388 A2 20010712 (WO 0150388)
Application: WO 2000US35530 20001228 (PCT/WO US0035530)
Priority Application: US 99173794 19991230

Designated States:

(Protection type is "patent" unless otherwise stated - for applications
prior to 2004)

AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH
GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN
MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR
(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW
(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 13974

Fulltext Availability:

Detailed Description Claims

Detailed Description

... the seller of assets wants to optimize the value of the portfolio, and will sometimes group the assets in "tranches." The term "tranche" as used herein is not limited to foreign notes but...

...the time for submitting a bid is about to expire, the bidder will evaluate the assets underwritten at that time, and then attempt to extrapolate a value to the assets that have...data reduction are used in valuing the third portion.

As the process proceeds and more assets are underwritten, the number of assets with values established in the first and second portions increase and the number of assets...

...more and more defined. More specifically, the assets in the third portion are evaluated by grouping the assets into clusters having probability of value based on similarity to valuations of assets in the first and...

...of occurrence for levels or bins of individual attribute variables and pairs of attribute variables, grouping the assets according to the value of a response variable or frequency of occurrence of the individual...

...I is a diagram 10 illustrating a known process for valuing a large portfolio of assets 12 through an underwriting cycle and through to making a bid for purchasing asset portfolio 12, for example, in...

...an underwritten first portion 16 and an untouched remainder portion 18. Before any of the assets are underwritten, first portion 16 is zero percent and remainder portion 18 is one hundred percent of...

...process progresses, first portion 16 increases and remainder portion 18 decreases. The objective is to underwrite as many assets as possible before a bid is submitted for the purchase of asset portfolio. The team...

...tranches for bidding purposes (as described below.) As in diagram 10, underwriters begin a full underwrite 14 of individual assets in portfolio 12 to produce a fully underwritten first portion 16 of assets. Underwriters also underwrite 34 a sample of assets in a second portion 36 of portfolio 12, and a...so well known or so reliable that the assets can be quickly and reliably fully underwritten or the assets are marked to market such that there is very little variance associated with the value...

...into any full sampling group valuation 18 required for bidding as suggested by the grouping of assets in a tranche.

The number of assets in an underwriting sample grouping can be as little as one to any number of assets. Partial sampling...on an ongoing, real time basis. Supervised learning process 206 uses business rules to identify clusters of assets having common aspects for valuation purposes.

Unsupervised learning process 208 uses feedback from prior data...of

statistically inferred valuation 142 by correlating to established criteria 80 in database 76 on assets in fully underwritten first portion 16 and assets in sample underwritten second portion 36. Selected data 78 related to one or more assets in third portion...

...selectable by the analysts conducting the evaluation and is further described below. If the seller groups the assets, then grouping according to seller groups or tranches is easily made and an appropriate valuation 146 developed...the best method has been employed.

In order to provide the best forecast of asset value, assets are evaluated by each method within a food chain until such time as they are valued by...not homogeneous, a method to establish the variability of cash flow recoveries is provided. Individual assets are clustered by group exposure. As much llllce value as possible is traditionally underwritten in the time permitted, recognizing...the encoded asset attributes in such a way so as to segment the portfolio into groups of similar assets. One such algorithm is K-means clustering.

In an example, where three asset attributes, Unpaid...sample size is derived.

Table B provides an example output from a study of a group of 20 loans, with estimated (expected) recoveries between 201/o and 30% of UPB, and a range of...flow diagram illustrating a process 2 1 0 for automated underwriting of segmentable financial instrument assets. First clusters of financial instruments are defined 212 by common attributes. An expert opinion 214 of value...

...selects and sets 220 the individual attributes to be used and then classifies 222 individual assets into clusters. Cluster valuation is applied 224 to each cluster asset. Using the cluster valuation, the values are...

...is then supplied to the individual asset values in credit analyst table 136 for the assets from the clusters being adjusted in procedure 40 to produce adjusted credit analyst table 140. The process is...

...underwriting, partial underwriting and inferred valuation. First, assets are sampled 242 according to risk. Second, assets are underwritten 244, and valuations recorded. Third, market value clusters are formed 246, such as by FCM, as described below. Fourth, regression models are built 248, for the underwritten assets.

A best model is selected 250, for the underwritten assets from among those built 248 earlier. Sixth, the counts for the selected models are calculated...

...a manner weighted by the counts to predict individual values for each of the non- underwritten assets. The individual asset values produced according to process 240 are then placed in adjusted credit analyst table 140 (see Figure 3).

In sampling assets 242, underwriters use stratified random sampling to select assets for detailed review. Strata are constructed from collateral ...

...a largely manual process in which expert underwriters ascribe a notion of worth to collateral assets. The

underwritten valuations are stored in a master database table, such as database 76 (shown in Figure...

...an analysis using a Classification And Regression Tree ("CART") based model, which results in a grouping of UW assets by Collateral Usage and Market Value ("CUMV") groups, using Previous Appraisal Amount ("PAA") as the...shown in Figure 3) performs this process. Model building 248 is used to assist the underwriter in prioritizing assets for full underwriting 14 and samplebased underwriting 34, as well as for inferential valuation.

The lower portion of...behavior. Unsupervised learning step 208, employs a fuzzy clustering method ("FCM") and knowledge engineering to group assets automatically for valuation. FCM is a known method that has been widely used and applied...one exemplary embodiment 25% of the assets and 60% of the face value of all assets. Full underwriting of these assets is warranted due to their size and value. However, this underwriting is fairly uniform for...

Claim

... of occurrence

for levels or bins of individual attribute variables and pairs of attribute variables;

grouping the assets according to the value of a response variable or frequency of occurrence of the individual...

...x2 are continuous variables.

. A method (32) according to Claim 1 wherein said step of

grouping the assets further comprises the step of computing an average for a response variable for all combinations...of occurrence for levels or bins of individual attribute variables and pairs of attribute variables;

group the assets according to the value of a response variable or frequency of occurrence of the individual...

...of occurrence for

levels or bins of individual attribute variables and pairs of attribute variables;

group the assets according to the value of a response variable or frequency of occurrence of the individual...

7/3,K/7 (Item 2 from file: 349)

DIALOG(R)File 349:PCT FULLTEXT

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00816840 **Image available**

METHODS AND APPARATUS FOR SIMULATING COMPETITIVE BIDDING YIELD

PROCEDES ET APPAREIL DE SIMULATION DU RENDEMENT D'OFFRES CONCURRENTIELLES

Patent Applicant/Assignee:

GE CAPITAL COMMERCIAL FINANCE INC, 201 High Ridge Road, Stamford, CT
06927-5100, US, US (Residence), US (Nationality)

Inventor(s):

MESSMER Richard P, 735 Riverview Road, Rensselaer, NY 12148, US,

EDGAR Marc T, 1015 Foxwood Drive, Clifton Park, NY 12065, US,

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US,

AKBAY Kunter S, 2337 Knolls View Drive, Niskayuna, NY 12309, US,

JOHNSON Christopher D, 17 Berkshire Drive W., Clifton Park, NY 12065, US,

Legal Representative:

BENINATI John F (et al) (agent), General Electric Company, 3135 Easton Turnpike W3C, Fairfield, CT 06431, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200150379 A2 20010712 (WO 0150379)

Application: WO 2000US34599 20001219 (PCT/WO US0034599)

Priority Application: US 99173947 19991230; US 2000737038 20001214

Designated States:

(Protection type is "patent" unless otherwise stated - for applications prior to 2004)

AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK EE ES FI GB GD
GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG
MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN
YU ZW

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR

(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG

(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW

(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 13594

Fulltext Availability:

Detailed Description

Detailed Description

... the seller of assets wants to optimize the value of the portfolio, and will sometimes group the assets in "tranches." The term "tranche" as used herein is not limited to foreign notes but...

...the time for submitting a bid is about to expire, the bidder will evaluate the loans underwritten at that time, and then attempt to extrapolate a value to the loans that have...data reduction are used in valuing the third portion.

As the process proceeds and more assets are underwritten, the number of assets in the first and second portions increase and the number of assets in the third...

...more and more defined. More specifically, the assets in the third portion are evaluated by grouping the assets into clusters based on similarity to valuations of assets in the first and second portions.

Hypothetical bids...is a diagram 10 illustrating a known process for valuing a

large portfolio of assets 12 through an underwriting cycle and through to making a bid for purchasing asset portfolio 12, for example, in...

...an underwritten first portion 16 and an untouched remainder portion 18, Before any of the assets are underwritten, first portion 16 is zero percent and remainder portion 18 is one hundred percent of...

...process progresses, first portion 16 increases and remainder portion 18 decreases. The objective is to underwrite as many assets as possible before a bid is submitted for the purchase of asset portfolio. The team ...

...tranches for bidding purposes (as described below.) As in diagram 10, underwriters begin a full underwrite 14 of individual assets in portfolio 12 to produce a fully underwritten first portion 16 of assets. Underwriters also underwrite 34 a sample of assets in a second portion 36 of portfolio 12, and a...so well known or so reliable that the

assets can be quickly and reliably fully underwritten or the assets are marked to market such that there is very little variance associated with the value...

...any full sampling group valuation I 1 8 required for bidding as suggested by the grouping of assets in a tranche.

The number of assets in an underwriting sample grouping can be as little as one to any number of assets. Partial sampling...on an ongoing, real time basis.

Supervised learning process 206 uses business rules to identify clusters of assets having common aspects for valuation purposes. Unsupervised learning process 208 uses feedback from prior data...accuracy of statistically inferred valuation 142 by correlating to established criteria 80 in database on assets in fully underwritten first portion 16 and assets in sample underwritten second portion 36. Selected data 78 related to one or more assets in third portion...

...selectable by the analysts conducting the evaluation and is further described below. If the seller groups the assets, then grouping according to seller groups or tranches is easily made and an appropriate valuation 146 developed...the best method has been employed.

In order to provide the best forecast of asset value, assets are evaluated by each method within a food chain until such time as they are valued by...not homogeneous, a method to establish the variability of cash flow recoveries is provided. Individual assets are clustered by group exposure. As much face value as possible is traditionally underwritten in the time permitted, recognizing...the encoded asset attributes in such a way so as to segment the portfolio into groups of similar assets. One such algorithm is K-means clustering.

In an example, where three asset attributes, Unpaid...sample size is derived.

Table B provides an example output from a study of a group of 20 loans, with estimated (expected) recoveries between 20% and 30% of UPB, and a range of UPB...a flow diagram illustrating a process 21 0 for automated underwriting of segmentable financial instrument assets. First clusters of financial instruments are defined 212 by common attributes. An expert opinion 214 of value...selects and sets 220 the individual attributes to be used and then classifies 222 individual assets into clusters. Cluster valuation is applied 224 to each cluster asset. Using the cluster valuation, the values are...

...is then supplied to the individual asset values in credit analyst table 136 for the assets from the clusters being adjusted in procedure 40 to produce adjusted credit analyst table 140. The process is...

...underwriting, partial underwriting and inferred valuation. First, assets are sampled 242 according to risk. Second, assets are underwritten 244, and valuations recorded. Third, market value clusters are formed 246, such as by FCM, as described below. Fourth, regression models are built 248, for the underwritten assets.

A best model is selected 250, for the underwritten assets from among those built 248 earlier. Sixth, the counts for the selected models are calculated...

...a manner weighted by the counts to predict individual values for each of

the non- underwritten assets . The individual asset values produced according to process 240 are then placed in adjusted credit analyst table 140 (see Figure 3).

In sampling assets 242, underwriters use stratified random sampling to select assets for detailed review. Strata are constructed from collateral ...a largely manual process in which expert underwriters ascribe a notion of worth to collateral assets . The underwritten valuations are stored in a master database table, such as database 76 (shown in Figure...

...an analysis using a Classification And Regression Tree ("CART") based model, which results in a grouping of UW assets by Collateral Usage and Market Value ("CUMV") groups, using Previous Appraisal Amount ("PAA") as the...shown in Figure 3) performs this process. Model building 248 is used to assist the underwriter in prioritizing assets for full underwriting 14 and sample-based underwriting 34, as well as for inferential valuation.

The lower portion...behavior. Unsupervised learning step 208, employs a fuzzy clustering method ("FCM") and knowledge engineering to group assets automatically for valuation. FCM is a known method that has been widely used and applied...one exemplary embodiment 25% of the assets and 60% of the face value of all assets . Full underwriting of these assets is warranted due to their size and value. However, this underwriting is fairly uniform for...

7/3,K/8 (Item 3 from file: 349)

DIALOG(R)File 349:PCT FULLTEXT

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00816815 **Image available**

METHODS AND APPARATUS FOR RAPID DEPLOYMENT OF A VALUATION SYSTEM

PROCEDES ET DISPOSITIF POUR LE DEPLOIEMENT RAPIDE D'UN SYSTEME D'EVALUATION

Patent Applicant/Assignee:

GE CAPITAL COMMERCIAL FINANCE INC, 201 High Ridge Road, Stamford, CT
06927-5100, US, US (Residence), US (Nationality)

Inventor(s):

DINGMAN Brian N, 284 Woods Hollow Road, Gloversville, NY 12078, US,
MESSMER Richard P, 735 Riverview Road, Rexford, NY 12148, US,
EDGAR Marc T, 1015 Foxwood Drive, Clifton Park, NY 12065, US,
JOHNSON Christopher D, 17 Berkshire Drive W., Clifton Park, NY 12065, US,

Legal Representative:

BENINATI John F (et al) (agent), General Electric Company, 3135 Easton
Turnpike W3C, Fairfield, CT 06431, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200150348 A2 20010712 (WO 0150348)

Application: WO 2000US34916 20001221 (PCT/WO US0034916)

Priority Application: US 99173695 19991230; US 2000741211 20001219

Designated States:

(Protection type is "patent" unless otherwise stated - for applications prior to 2004)

AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH
GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN
MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR
(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG

(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW

(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 14611

Fulltext Availability:

Detailed Description

Claims

Detailed Description

... the seller of assets wants to optimize the value of the portfolio, and will sometimes group the assets in "tranches." The term "tranche" as used herein is not limited to foreign notes but...

...the time for submitting a bid is about to expire, the bidder will evaluate the loans underwritten at that time, and then attempt to extrapolate a value to the loans that have...I is a diagram 10 illustrating a known process for valuing a large portfolio of assets 12 through an underwriting cycle and through to making a bid for purchasing asset portfolio 12, for example, in...

...an underwritten first portion 16 and an untouched remainder portion 18. Before any of the assets are underwritten, first portion 16 is zero percent and remainder portion 18 is one hundred percent of...

...process progresses, first portion 16 increases and remainder portion 18 decreases. The objective is to underwrite as many assets as possible before a bid is submitted for the purchase of asset portfolio. The team ...

...tranches for bidding purposes (as described below.) As in diagram 10, underwriters begin a full underwrite 14 of individual assets in portfolio 12 to produce a fully underwritten first portion 16 of assets. Underwriters also underwrite 34 a sample of assets in a second portion 36 of portfolio 12, and a...so well known or so reliable that the assets can be quickly and reliably fully underwritten or the assets are marked to market such that there is very little variance associated with the value...

...any full sampling group valuation I 1 8 required for bidding as suggested by the grouping of assets in a tranche.

The number of assets in an underwriting sample grouping can be as little as one to any number ...on an ongoing, real time basis.

Supervised teaming process 206 uses business rules to identify clusters of assets having common aspects for valuation purposes. Unsupervised teaming process 208 uses feedback from prior data...

Claim

... of statistically inferred valuation 142 by correlating to established criteria 80 in database 76 on assets in fully underwritten first portion 16 and assets in sample underwritten second portion 36. Selected data 78 related to one or more assets in third portion...

...selectable by the analysts conducting the evaluation and is further described below. If the seller groups the assets, then grouping according to seller groups or tranches is easily made and an appropriate

valuation 146 developed...the best method has been employed. In order to provide the best forecast of asset value , assets are evaluated by each method within a food chain until such time as they are valued by... not homogeneous, a method to establish the variability of cash flow recoveries is provided. Individual assets are clustered by group exposure. As much face value as possible is traditionally underwritten in the to time permitted...the encoded asset attributes in such a way so as to segment the portfolio into groups of similar assets . One such algorithm is K-means clustering. In an example, where three asset attributes, Unpaid...sample size is derived.' Table B provides an example output from a study of a group of 20 loans , with estimated (expected) recoveries between 20% and 30% of UPB, and a range of UPB...is a flow diagram illustrating a process 210 for automated underwriting of segmentable financial instrument assets . First clusters of financial instruments are defined 212 by common attributes. An expert opinion 214 of value...

...selects and sets 220 the individual attributes to be used and then classifies 222 individual assets into clusters . Cluster valuation is applied 22 4 to each cluster asset. Using the cluster valuation, the values...

...is then supplied to the individual asset values in credit analyst table 136 for the' assets from the clusters being adjusted in procedure 40 to produce adjusted credit analyst table 140. The process is...

...underwriting, partial underwriting and inferred valuation. First, assets are sampled 242 according to risk. Second, assets are underwritten 244, and valuations recorded. Third, market value clusters are formed 246, such as by FCM, as described below. Fourth, regression models are built 248, for the underwritten assets . A best model is selected 250, for the underwritten assets from among those built 248 earlier. Sixth, the counts for the selected models are calculated...

...a manner weighted by the counts to predict individual values for each of the non- underwritten assets . The individual asset values produced according -10 to process 240 are then placed in adjusted credit analyst table 140 (see Figure 3).

In sampling assets 242, underwriters use stratified random sampling to select assets for detailed review. Strata are constructed from collateral ...a largely manual process in which expert underwriters ascribe a notion of worth to collateral assets . The underwritten valuations are stored in a master database table, such as database 76 (shown in Figure...

...an analysis using a Classification And Regression Tree ("CART") based model, which results in a grouping of U`W assets by Collateral Usage and Market V

alue ("CUMV") groups, using Previous Appraisal Amount ("PAA") as...shown in Figure 3) performs this process. Model building 248 is used to assist the underwriter in prioritizing assets for full underwriting 14 and sample-based underwriting 34, as well as for inferential valuation. The lower portion...behavior. Unsupervised learning step 208, employs a fuzzy clustering method ("FCM") and knowledge engineering to group assets automatically for valuation. FCM is a known method that has been widely used and applied...one exemplary embodiment 25% of the assets and 60% of the face value of all assets . Full underwriting of these assets is warranted due to their size and value. However, this

underwriting is fairly uniform for...

7/3,K/9 (Item 4 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00816792 **Image available**

VALUATION PREDICTION MODELS IN SITUATIONS WITH MISSING INPUTS
MODELES DE PREVISION D'EVALUATION DANS DES SITUATIONS AVEC ENTREES
MANQUANTES

Patent Applicant/Assignee:

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AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH
GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN
MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR
(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW
(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

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Fulltext Word Count: 14188

Fulltext Availability:

Detailed Description

Claims

Detailed Description

... the seller of assets wants to optimize the value of the portfolio, and
will sometimes group the assets in "tranches." The term "tranche" as
used herein is not limited to foreign notes but...

...the time for submitting a bid is about to expire, the bidder will
evaluate the loans underwritten at that time, and then attempt to
extrapolate a value to the loans that have...data reduction are used in
valuing the third portion.

As the process proceeds and more assets are underwritten, the number
of assets in the first and second portions increase and the number of
assets in the third...

...more and more defined. More specifically, the assets in the third
portion are evaluated by grouping the assets into clusters based on
similarity to valuations of assets in the first and second portions.

A method for predicting value of non- underwritten assets for which
data representations are partial or incomplete by projecting values onto

the nonunderwritten assets from at least one of fully underwritten assets , other nonunderwritten assets with complete data representations and available data from nonunderwritten assets with partial or incomplete data representations having similar identifiable characteristics is disclosed. The method includes the steps of sampling assets according to risk, underwriting assets and recording valuations, forming market value clusters, building regression models for underwritten assets , selecting the best models for the underwritten assets , counting a number of times the models are selected and using the selected model to make a prediction of underwriting value for the non- underwritten assets .

BRIEF DESCRIPTION OF THE DRAWINGS

Figure I is a flow diagram illustrating a known process process for valuing a

large portfolio of assets 12 through an underwriting cycle and through to making a bid for purchasing asset portfolio 12, for example, in...

...an underwritten first portion 16 and an untouched remainder portion 18. Before any of the assets are underwritten , first portion 16 is zero percent and remainder portion 18 is one hundred percent of...

...process progresses, first portion 16 increases and remainder portion 18 decreases. The objective is to underwrite as many assets as possible before a bid is submitted for the purchase of asset portfolio, The team ...

...tranches for bidding purposes (as described below.) As in diagram 10, underwriters begin a full underwrite 14 of individual assets in portfolio 12 to produce a fully underwritten first portion 16 of assets . Underwriters also underwrite 34 a sample of assets in a second portion 36 of portfolio 12, and a...so well known or so reliable that the assets can be quickly and reliably fully underwritten or the assets are marked to market such that there is very little variance associated with the value...

...into any fall sampling group valuation II 8 required for bidding as suggested by the grouping of assets in a tranche.

The number of assets in an underwriting sample grouping can be as little as one to any number of assets. Partial sampling...on an ongoing, real time basis. Supervised learning process 206 uses business rules to identify clusters of assets having common aspects for valuation purposes, Unsupervised learning process 208 uses feedback from prior data ...accuracy of statistically inferred valuation 142 by correlating to established criteria 80 in database on assets in fully underwritten first portion 16 and assets in sample underwritten second portion 36. Selected data 78 related to one or more assets in third portion...

...selectable by the analysts conducting the evaluation and is further described below. If the seller groups the assets , then grouping according to seller groups or tranches is easily made and an appropriate valuation 146 developed...method has been employed.

I 0 In order to provide the best forecast of asset value , assets are evaluated by each method within a food chain until such time as they are valued by...not homogeneous, a method to establish the variability of cash flow recoveries is provided. Individual assets are clustered by group exposure. As much face value as possible is traditionally underwritten in the time permitted, recognizing...the

encoded asset attributes in such a way so as to segment the portfolio into groups of similar assets . One such algorithm is K-means clustering.

In an example, where three asset attributes, Unpaid...sample size is derived.

Table B provides an example output from a study of a group of 20 loans , with estimated (expected) recoveries between 20% and 30% of UPB, and a range of UPB...flow diagram illustrating a process 2 1 0 for automated underwriting of segmentable financial instrument assets . First clusters of financial instruments are defined 212 ...selects and sets 220 the individual attributes to be used and then classifies 222 individual assets into clusters . Cluster valuation is applied 224 to each cluster asset. Using the cluster valuation, the values are...

...is then supplied to the individual asset values in credit analyst table 136 for the assets from the clusters being adjusted in procedure 40 to produce adjusted credit analyst table 140. The process is...

...underwriting, partial underwriting and inferred valuation. First, assets are sampled 242 according to risk. Second, assets are underwritten 244, and valuations recorded. Third, market value clusters are formed 246, such as by FCM, as described below. Fourth, regression models are built 248, for the underwritten assets .

A best model is selected 250, for the underwritten assets from among those built 248 earlier. Sixth, the counts for the selected models are calculated...

...a manner weighted by the counts to predict individual values for each of the non- underwritten assets . The individual asset values produced according to process 240 are then placed in adjusted credit analyst table 140 (see Figure 3).

In sampling assets 242, underwriters use stratified random sampling to select assets for detailed review. Strata are constructed from collateral ...a largely manual process in which expert underwriters ascribe a notion of worth to collateral assets . The underwritten valuations are stored in a master database table, such as database 76 (shown in Figure...

...perform an analysis using a classification and regression tree based model, which results in a grouping of UW assets by Collateral Usage and Market Value ("CUMV") groups, using Previous Appraisal Amount ("PAA") as the...shown in Figure 3) performs this process. Model building 248 is used to assist the underwriter in prioritizing assets for full underwriting 14 and samplebased underwriting 34, as well as for inferential valuation.

The lower portion of...behavior. Unsupervised learning step 208, employs a fuzzy clustering method ("FCM") and knowledge engineering to group assets automatically for valuation. FCM is a known method that has been widely used and applied...one exemplary embodiment 25% of the assets and 60% of the face value of all assets . Full underwriting of these assets is warranted due to their size and value. However, this underwriting is fairly uniform for...

Claim

1 . A method (240) for predicting value of non- underwritten assets for which data representations are partial or incomplete by projecting values onto the non- underwritten assets from at least one of fully underwritten assets , other nonunderwritten assets with complete data representations and available data from nonunderwritten assets with partial or incomplete data representations having similar identifiable characteristics, said method comprising the steps of sampling (242) assets according to risk; underwriting (244) assets and recording valuations; forming (246) market value clusters; building (248) regression models for underwritten assets ; selecting (250) the best models for the underwritten assets ; counting (252) a number of times the models are selected; and using (254) the selected model to make a prediction of underwriting value for the non- underwritten assets .

1 5 2. A method (240) according to Claim 1 wherein said step of sampling...

...previous appraisal amount.

3 A method (240) according to Claim I wherein said step of underwriting (244) assets and recording valuations further comprises the step of storing valuations in a master database (76...

...and regression tree analysis using previous appraisal amount as a driving variable, resulting in a grouping of assets according to collateral usage and market value groups.

5 A method (240) according to Claim I wherein said step of building (248) regression models for underwritten assets further comprises the step of building models which use as variables different groupings of data...

...according to Claim 5 wherein said step of selecting (250) the best models for the underwritten assets further comprises the step of selecting models according to $\min \text{fabs}(y - @,)$, jE9'j, where y...

...of counting a number of times each model produced a best prediction for 1 5 underwriting of assets .

8 A method (240) according to Claim I wherein said step of using the selected (250) model to make a prediction of underwriting value for the non- underwritten assets further comprises the step of predicting underwriting value according to E IlkfljJlk i,j,k...substituting a corresponding statistic for @Ik

11 A system (300) for predicting value of non- underwritten assets for which data representations are partial or incomplete by projecting values onto the non- underwritten assets from at least one of fully underwritten assets , other nonunderwritten assets with complete data representations and available data from nonunderwritten assets with partial or incomplete data...

...client system connected to said server through a network, said server configured to sample (242) assets according to risk, underwrite (244) assets and record valuations, form (246) market value clusters, build (248) regression models for underwritten assets , select (250) the best models for the underwritten assets , count (252)

a number of times the models are selected and use (254) the selected model to make a prediction of underwriting value for the non-underwritten assets ,

12 A system (300) according to Claim I 1 wherein said server (302) configured to...

...regression tree analysis using a previous appraisal amount as a driving variable, resulting in a grouping of assets according to collateral usage and market value groups.

15 A system (300) according to Claim...

...configured to count (252) a number of times each model produced a best prediction for underwriting of assets .

1 5 18. A system (300) according to Claim I I wherein said server (302)...assets for which data representations are partial or incomplete by projecting values onto the non- underwritten assets from at least one of fully underwritten assets , other non- underwritten assets with complete data representations and available data from non- underwritten assets with partial or incomplete data representations having similar identifiable characteristics, said computer including a database (76) of asset portfolios (12), said computer programmed to: sample assets according to risk; underwrite assets and record valuations; form market value clusters; build regression models for underwritten assets ; select the best models for the underwritten assets ; count a number of times the models are selected; and use the selected model to make a prediction of underwriting value for the non- underwritten assets .

22 A computer (38) according to Claim 21 programmed to select assets from a list...

...regression tree analysis using a previous appraisal amount as a driving variable, resulting in a grouping of assets according to collateral usage and market value groups.

25 A computer (38) according to Claim...

...programmed to count (252) a number of times each model produced a best prediction for underwriting of assets .

28 A computer (38) according to Claim 21 programmed to predict underwriting value according to...

7/3,K/10 (Item 5 from file: 349)

DIALOG(R) File 349: PCT FULLTEXT

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00816789 **Image available**

METHODS AND SYSTEMS FOR EFFICIENTLY SAMPLING PORTFOLIOS FOR OPTIMAL UNDERWRITING

PROCEDES ET SYSTEMES D'ECHANTILLONNAGE EFFICACE DE PORTEFEUILLES EN VUE D'UNE GARANTIE OPTIMALE

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Legal Representative:

BENINATI John F (et al) (agent), General Electric Company, 3135 Easton
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prior to 2004)

AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH
GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN
MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZW

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR

(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG

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Publication Language: English

Filing Language: English

Fulltext Word Count: 13776

Fulltext Availability:

Detailed Description

Claims

Detailed Description

... the seller of assets wants to optimize the value of the portfolio, and
will sometimes group the assets in "tranches." The term "tranche" as
used herein is not limited to foreign notes but...

...the time for submitting a bid is about to expire, the bidder will
evaluate the assets underwritten at that time, and then -attempt to
extrapolate a value to the assets that have...data reduction are used in
valuing the third portion.

As the process proceeds and more assets are underwritten, the number
of assets with values established in the first and second portions
increase and the number of assets...

...more and more defined. More specifically, the assets in the third
portion are evaluated by grouping the assets into clusters having
probability of value based on similarity to valuations of assets in the
first and...

...is a diagram IO illustrating a known process for valuing a
large port'folio of assets 12 through an underwriting cycle and
through to making a bid for purchasing asset portfolio 12, for example,
in...first portion 16 and an untouched 1 5 remainder portion 18. Before
any of the assets are underwritten, first portion 16 is zero percent
and remainder portion 18 is one hundred percent of...

...progresses, first portion 16 increases and remainder portion I 8
decreases. The objective is to underwrite as many assets as possible

before a bid is submitted for the purchase of asset portfolio. The team
...

...purposes (as described below.) As in diagram I 0, underwriters 1 0 begin a full underwrite 14 of individual assets in portfolio 12 to produce a fully underwritten first portion 16 of assets. Underwriters also underwrite 34 a sample of assets in a second portion 36 of portfolio 12, and a...so well known or so reliable that the assets can be quickly and reliably fully underwritten or the assets are marked to market such that there is very little variance associated with the value...

...any fall sampling group valuation I 1 8 required for bidding as suggested by the grouping of assets in a tranche.

The number of assets in an underwriting sample grouping can be as little as one to any number of assets. Partial sampling...on an ongoing, real time basis.

Supervised learning process 206 uses business rules to identify clusters of assets having common aspects for valuation purposes. Unsupervised learning process 208 uses feedback from prior data...of statistically inferred valuation 142 by correlating to established criteria 80 in database 76 on assets in fully underwritten first portion 16 and assets in sample underwritten second portion 36. Selected data 78 related to one or more assets in third portion 42...

...selectable by the analysts conducting the evaluation and is further described below. If the seller groups the assets, then 1 5 grouping according to seller groups or tranches is easily made and an appropriate valuation 146 developed...

...the best method has been employed.

In order to provide the best forecast of asset value, assets are evaluated by each ...not homogeneous, a method to establish the variability of cash flow recoveries is provided. Individual assets are clustered by group exposure. As much face value as possible is traditionally underwritten in the time permitted, recognizing...the encoded asset attributes in such a way so as to segment the portfolio into groups of similar assets. One such algorithm is K-means clustering.

In an example, where three asset attributes, Unpaid...sample size is derived.

Table B provides an example output from a study of a group of 20 loans, with estimated (expected) recoveries between 20% and 30% of UPB, and a range of UPB...a flow diagram illustrating a process 21 0 for automated underwriting of segmentable financial instrument assets. First clusters of financial instruments are defined 212 by common attributes. An expert opinion 214 of value...

...sets 220 1 0 the individual attributes to be used and then classifies 222 individual assets into clusters. Cluster valuation is applied 224 to each cluster asset. Using the cluster valuation, the values are...

...is then supplied to the individual asset values in credit analyst table 136 for the assets from the clusters being adjusted in procedure 40 to produce adjusted credit analyst table 140. The process is...

...underwriting, partial underwriting and inferred valuation. First, assets are sampled 242 according to risk. Second, assets are underwritten 244, and valuations recorded. Third, market value clusters are formed 246, such as by FCM, as described below. Fourth, regression models are built 248, for the underwritten assets. A best model is selected 250, for the underwritten assets from among those built 248 earlier. Sixth, the counts for the selected models are calculated...

...a manner weighted by the counts to predict individual values for each of the non- underwritten assets. The individual asset values produced according I 0 to process 240 are then placed in adjusted credit analyst table 140 (see Figure 3).

In sampling assets 242, underwriters use stratified random sampling to select assets for detailed review. Strata are constructed from collateral ...

...a largely manual process in which expert underwriters ascribe a notion of worth to collateral assets. The underwritten valuations are stored in a master database table, such as database ...an analysis using a Classification And Regression Tree ("CART") based model, which results in a grouping of UW assets by Collateral Usage and Market Value ("CU`MV`) groups, using Previous Appraisal Amount ("PAA") as...shown in Figure 3) performs this process. Model building 248 is used to assist the underwriter in prioritizing assets for full underwriting 14 and sample-based underwriting 34, as well as for-inferential valuation.

The lower portion...behavior. Unsupervised learning step 208, employs a fuzzy clustering method ("FCM") and knowledge engineering to group assets automatically for valuation. FCM is a known method that has been widely used 1 5...one exemplary embodiment 25% of the assets and 60% of the face value of all assets. Full underwriting of these assets is warranted due to their size and value. However, this underwriting is fairly uniform for...

Claim

... in an asset portfolio (12) for optimal underwriting coverage when only a portion of the assets are to be underwritten, said method comprising the steps of determining descriptive attributes of assets in the portfolio; encoding individual attributes; and clustering (120) the assets for underwriting based upon occurrences of the descriptive attributes.

2 A method (32) according to Claim I...

...total recoveries probable further comprises the step of determining a sample size, n, for the cluster (120) of assets according to:

$N - 2 N$

$h_2 = k' x n I - n X Y X I (Y_i - k y x$

N...

...with probability> I

6 A method (32) according to Claim 1 wherein said step of

clustering (120) the assets for underwriting further comprises the step of using a supervised clustering process (206) to cluster the assets .

. A method (32) according to Claim 1 wherein said step of clustering (120) the assets for underwriting further comprises the step of using an unsupervised clustering process (208) to cluster the assets .

8 A method (32) according to Claim 1 wherein said step of clustering (120) the assets for underwriting further comprises the step of using a Monte Carlo process to cluster the assets .

9 A system (300) configured to sample assets in an asset portfolio (12) for optimal individual attributes; and

15 cluster (120) the assets for underwriting based upon occurrences of the descriptive attributes.

10 A system (300) according to Claim 9...

...I I wherein' said server

(302) configured to determine a sample size, n , for the cluster of assets according to:

2 N

$x, 2$

$n(y_j - R_x)$

$=k$

$I \sum_{i=1}^N x_i^2$...

...Claim 9 wherein said server (302)

configured to use a supervised clustering process (206) to cluster (120) the assets .

15 A system (300) according to Claim 9 wherein said server (302) configured to use an unsupervised clustering process (208) to cluster (120) the assets .

16 A system (300) according to Claim 9 wherein said server (302) configured to use a Monte Carlo process to cluster (120) the assets .

17 A computer (38) for sampling assets in an asset portfolio (12) for optimal underwriting...

...programmed to:

determine descriptive attributes of assets in the portfolio;

encode individual attributes; and

cluster (120) the assets for underwriting based upon occurrences of the descriptive attributes.

18 A computer (38) according to Claim' 17...

...38) according to Claim 19 programmed to

determine a sample size, n , for the cluster of assets according to:

N

$\sum_{i=1}^N x_i^2$

$n(y_i$

$R_x)^2$

$=k \sum_{i=1}^N x_i^2$

N...computer (38) according to Claim 17 programmed to use a

supervised clustering process (206) to cluster (120) the assets .

23 A computer (38) according to Claim 17 programmed to use an unsupervised clustering process (208) to cluster (120) the assets .
. A computer (38) according to Claim 17 programmed to use a Monte Carlo process to cluster (120) the assets .

7/3,K/11 (Item 6 from file: 349)

DIALOG(R)File 349:PCT FULLTEXT

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00816787 **Image available**

METHODS AND SYSTEMS FOR FINDING VALUE AND REDUCING RISK

PROCEDES ET SYSTEMES PERMETTANT DE RECHERCHER UNE VALEUR ET DE REDUIRE LES RISQUES

Patent Applicant/Assignee:

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Inventor(s):

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STEWART William C, 13 Sycamore Street, Norwalk, CT 06855, US,
EDGAR Marc T, 1015 Foxwood Drive, Clifton Park, NY 12065, US,

Legal Representative:

BENINATI John F (et al) (agent), General Electric Company, 3135 Easton
Turnpike W3C, Fairfield, CT 06431, US,

Patent and Priority Information (Country, Number, Date):

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Designated States:

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AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH
GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN
MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR
(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW
(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 13422

Fulltext Availability:

Detailed Description

Claims

Detailed Description

... the seller of assets wants to optimize the value of the portfolio, and will sometimes group the assets in "tranches." The term "tranche" as used herein is not limited to foreign notes but...
...the time for submitting a bid is about to expire, the bidder will evaluate the assets underwritten at that time, and then attempt to extrapolate a value to the assets that have...data reduction are used in valuing the third portion.

As the process proceeds and more assets are underwritten , the number

of assets with values established in the first and second portions increase and the number of assets...

...more and more defined. More specifically, the assets in the third portion are evaluated by grouping the assets into clusters having probability of value based on similarity to valuations of assets in the first and...

...I is a diagram 10 illustrating a known process for valuing a large portfolio of assets 12 through an underwriting cycle and through to making a bid for purchasing asset portfolio 12, for example, in...an underwritten first portion 16 and an untouched remainder portion 18. Before any of the assets are underwritten, first portion 16 is zero percent and remainder portion 18 is one hundred percent of...

...process progresses, first portion 16 increases and remainder portion 18 decreases. The objective is to underwrite as many assets as possible before a bid is submitted for the purchase of asset portfolio. The team ...

...tranches for bidding purposes (as described below.) As in diagram 10, underwriters begin a full underwrite 14 of individual assets in portfolio 12 to produce a fully underwritten first portion 16 of assets. Underwriters also underwrite 34 a sample of assets in a second portion 36 of portfolio 12, and a...so well known or so reliable that the assets can be quickly and reliably fully underwritten or the assets are marked to market such that there is very little variance associated with the value...

...any full sampling group valuation I 1 8 required for bidding as suggested by the grouping of assets in a tranche.

The number of assets in an underwriting sample grouping can be as little as one to any number of assets. Partial sampling...on an ongoing, real time basis.

Supervised learning process 206 uses business rules to identify clusters of assets having common aspects for valuation purposes. Unsupervised learning process 208 uses feedback from prior data...of statistically inferred valuation 142 by correlating to established criteria 80 in database 76 on assets in fully underwritten first portion 16 and assets in sample underwritten second portion 36. Selected data 78 related to one or more-assets in third portion...

...selectable by the analysts conducting the evaluation and is further described below. If the seller groups the assets, then grouping according to seller groups or tranches is easily made and an appropriate valuation 146 developed...

...the best method has been employed.

In order to provide the best forecast of asset value, assets are evaluated by each method within a food chain until such time ...not homogeneous, a method to establish the variability of cash flow recoveries is provided. Individual assets are clustered by group exposure. As much face value as possible is traditionally underwritten in the time permitted...the encoded asset attributes in such a way so as to segment the portfolio into groups of similar assets. One such algorithm is K-means clustering. In an example, where three asset attributes, Unpaid...size is derived.

10 Table B provides an example output from a study of a group of 20 loans, with estimated (expected) recoveries between 20% and 30% of UPB, and a

I

range of...is a flow diagram illustrating a process 210 for automated underwriting of segmentable financial instrument assets. First clusters of financial instruments are defined 212 by common attributes. An expert opinion 214 of value...

...selects and sets 220 the individual attributes to be used and then classifies 222 individual assets into clusters. Cluster valuation is applied 224 to each cluster asset. Using the cluster valuation, the values are...

...is then supplied to the individual asset values in credit analyst table 136 for the assets from the clusters being adjusted in procedure 40 to produce adjusted credit analyst table 140. The process is...

...underwriting, partial underwriting and inferred valuation. First, assets are sampled 242 according to risk. Second, assets are underwritten 244, and valuations recorded. Third, market value clusters are formed 246, such as by FCM, as described below. Fourth, regression models are built 248, for the underwritten assets.

A best model is selected 250, for the underwritten assets from among those built 248 earlier. Sixth, the counts for the selected models are calculated...

...a manner weighted by the counts to predict individual values for each of the non-underwritten assets. The individual asset values produced according to process 240 are then placed in adjusted credit analyst table 140 (see Figure 3).

In sampling assets 242, underwriters use stratified random sampling to select assets for detailed review. Strata are constructed from collateral...

...a largely manual process in which expert underwriters ascribe a notion of worth to collateral assets. The underwritten valuations are stored in a master database table, such as database 76 (shown in ...an analysis using a Classification And Regression Tree ("CART") based model, which results in a grouping of UW assets by Collateral Usage and Market Value ("CUMV") groups, using Previous Appraisal Amount ("PAA") as the...shown in Figure 3) performs this process. Model building 248 is used to assist the underwriter in prioritizing assets for full underwriting 14 and sample-based underwriting 34, as well as for inferential valuation..

The lower portion...behavior. Unsupervised teaming step 208, employs a fuzzy clustering method ("FCM") and knowledge engineering to group assets automatically for valuation. FCM is a known method that has been widely used 5 and...one exemplary embodiment 25% of the assets and 60% of the face value of all assets. Full underwriting of these assets is warranted due to their size and value. However, this underwriting is fairly uniform for...

Claim

... Claim 1 wherein said step of

recalculating asset value further comprises the step of pre- underwriting assets to determine asset value.

3 A method (32) according to Claim 1 wherein said step of recalculating asset value further comprises the step of partially underwriting (34) assets to determine asset value.

4 A method (32) according to Claim 1 wherein said step of recalculating asset value further comprises the step of fully underwriting (I 4) assets to determine asset value.

1 5 5. A method according to Claim 4 wherein said step of fully underwriting (14) assets further comprises the steps of underwriting a number of the assets on a full cash...

...13 A system (300) according to Claim 12 wherein said server (302) configured to pre- underwrite assets to determine asset value.

14 A system (300) according to Claim 12 wherein said server (302) configured to partially underwrite (34) assets to determine asset value.

15 A system (300) according to Claim 12 wherein said server (302) configured to fully underwrite (14) assets to determine asset value.

16 A system (300) according to Claim 15 wherein said server...to determine asset value.

25 A computer (38) according to Claim 23 programmed to partially underwrite (34) assets to determine asset value.

26 A computer (38) according to Claim 23 programmed to fully...

7/3,K/12 (Item 7 from file: 349)

DIALOG(R)File 349:PCT FULLTEXT

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00816786 **Image available**

METHODS AND APPARATUS FOR AUTOMATED UNDERWRITING OF SEGMENTABLE PORTFOLIO ASSETS

PROCEDES ET DISPOSITIFS DE GARANTIE AUTOMATISEE D'ACTIFS DE PORTEFEUILLE POUVANT ETRE SEGMENTES

Patent Applicant/Assignee:

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Legal Representative:

BENINATI John F (et al) (agent), General Electric Company, 3135 Easton Turnpike W3C, Fairfield, CT 06431, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200150315 A2 20010712 (WO 0150315)

Application: WO 2000US34670 20001220 (PCT/WO US0034670)

Priority Application: US 99173946 19991230; US 2000737035 20001214

Designated States:

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AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK EE ES FI GB GD
GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG
MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN
YU ZW

(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR

(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG

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Publication Language: English

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Fulltext Word Count: 13157

METHODS AND APPARATUS FOR AUTOMATED UNDERWRITING OF SEGMENTABLE PORTFOLIO ASSETS

Fulltext Availability:.

Detailed Description

Claims

Detailed Description

... report. ning of each regular issue of the PCT Gazette.

**METHODS AND APPARATUS FOR AUTOMATED
UNDERWRITING OF SEGMENTABLE PORTFOLIO
ASSETS**

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Application...

...the seller of assets wants to optimize the value of the portfolio, and will sometimes group the assets in "tranches." The term "tranche" as used herein is not limited to foreign notes but...

...the time for submitting a bid is about to expire, the bidder will evaluate the loans underwritten at that time, and then attempt to extrapolate a value to the loans that have...data reduction are used in valuing the third portion.

As the process proceeds and more assets are underwritten, the number of assets in the first and second portions increase and the number of assets in the third...

...more and more defined. More specifically, the assets in the third portion are evaluated by grouping the assets into clusters based on similarity to valuations of assets in the first and second portions.

A method for the automated underwriting of the segmented assets.

using a portfolio valuation system is disclosed and includes the steps of defining 2clusters of...

...I is a diagram 10 illustrating a known process for valuing a large portfolio of assets 12 through an underwriting cycle and through to making a bid for purchasing asset portfolio 12, for example, in...an underwritten first portion 16 and an untouched remainder portion 18. Before any of the assets are underwritten, first portion 16 is zero percent and remainder portion 18 is one hundred percent of...

...tranches for bidding purposes (as described below.) As in diagram IO, underwriters begin a full underwrite 14 of individual assets in portfolio 12 to produce a fully underwritten first portion 16 of assets

. Underwriters also underwrite 34 a sample of assets in a second portion 36 of portfolio 12, and a...so well known or so reliable that the assets can be quickly and reliably fully underwritten or the assets are marked to market such that there is very little variance associated with the value...

...full sampling group valuation I 1 8 required for bidding as suggested by the grouping of assets in a tranche.

The number Of assets in an underwriting sample grouping can be as little as one to any number of assets. Partial sampling...on an ongoing, real time basis.

Supervised teaming process 206 uses business rules to identify clusters of assets having common aspects for valuation purposes. Unsupervised learning process 208 uses feedback from prior data...of statistically inferred valuation 142 by correlating to established criteria 80 in database 76 on assets in fully underwritten first portion 16 and assets in sample underwritten second portion 36. Selected data 78 related to one or more assets in third portion...selectable by the analysts conducting the evaluation and is further described below. If the seller groups the assets, then 1 5 grouping according to seller groups or tranches is easily made and an appropriate valuation 146 developed...

...the best method has been employed.

In order to provide the best forecast of asset value, assets are evaluated by each method within a food chain until such time as they are valued by...not homogeneous, a method to establish the variability of cash flow recoveries is provided. Individual' assets are clustered by group exposure. As much face value as possible is traditionally underwritten in the time permitted, recognizing...the encoded asset attributes in such a way so as to segment the portfolio into groups of similar assets. One such algorithm is K-means clustering.

In an example, where three asset attributes, Unpaid...size is derived.

10 Table 13 provides an example output from a study of a group of 20, loans, with estimated (expected) recoveries between 20% and 30% of UPB, and a range of UPB...is a flow diagram illustrating a process 210 for automated underwriting of segmentable financial instrument assets. First clusters of financial instruments are defined 212 by common attributes. An expert opinion 214 of value...

...selects and sets 220 the individual attributes to be used and then classifies 222 individual assets into clusters. Cluster valuation is applied 224 to each cluster asset. Using the cluster valuation, the values are...is then supplied to the individual asset values in credit analyst table 136 for the assets from the clusters being adjusted in procedure 40 to produce adjusted credit analyst table 140. The process is ...

...underwriting, partial underwriting and inferred valuation. First, assets are sampled 242 according to risk. Second, assets are underwritten 244, and valuations recorded. Third, market value clusters are formed 246, such as by FCM, as described below. Fourth, regression models are built 248, for the underwritten assets.

A best model is selected 250, for the underwritten assets from among

those built 248 earlier. Sixth, the counts for the selected models are calculated...

...a manner weighted by the counts to predict individual values for' each of the non- underwritten assets . The individual asset values produced according to process 240 are then placed in adjusted credit analyst table 140 (see Figure 3).

In sampling assets 242, underwriters use stratified random sampling to select assets for detailed review. Strata are constructed from collateral ...

...a largely manual process in which expert underwriters ascribe a notion-of worth to collateral assets . The underwritten valuations are stored in a master database table, such as database 76 (shown in Figure...an analysis using a Classification And Regression Tree ("CART") based model, which results in a grouping of UW assets by Collateral Usage and Market Value ("CUMV") groups, using Previous Appraisal Amount ("PAA") as...shown in Figure 3) performs this process. Model building 248 is used -to assist the underwriter in prioritizing assets for full underwriting 14 and sample-based underwriting 34, as well as for inferential valuation'.

The lower portion...behavior. -Unsupervised learning step 208, employs a fuzzy clustering method ("FCM") and knowledge engineering to group assets automatically for valuation. FCM is a known method that has been widely used and applied...one exemplary embodiment 25% of the assets and 60% of the face value of all assets . Full underwriting of these assets is warranted due to their size and value. However, this underwriting is fairly uniform for...

Claim

... A method (210) according to Claim 2 further comprising the step of classifying (222) individual assets into clusters .

4 A method (2 1 0) according to Claim 3 further comprising the step of...

...clusters of financial instruments b common attributes further

y
37

comprises the step of identifying clusters of assets with common characteristics using business rules.

8 A method(210) according to Claim 1 wherein said step of receiving an expert opinion (214) of value further comprises the step of evaluating the assets by computer (38) with the assistance from an experienced underwriter.

9 A portfolio valuation system...

...300) according to Claim 10 wherein said server (302) is configured to classify (222) individual assets into clusters

12 A system (300) according to Claim 11 wherein said server (302) is configured...

...A system (300) according to Claim 9 wherein said server (302) is configured to identify clusters of assets with common

characteristics using business rules.

...the underwriting.

19 A computer (38) according to Claim 18 programmed to classify (222) individual assets into clusters .

20 A computer (38) according to Claim 19 programmed to apply (224) a cluster valuation...

...least one asset class.

23 A computer (38) according to Claim 17 programmed to identify clusters of assets with common characteristics using business rules.

24 1 A computer (38) according to Claim 17...

7/3,K/13 (Item 8 from file: 349)

DIALOG(R)File 349:PCT FULLTEXT

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00816785 **Image available**

**METHODS AND SYSTEMS FOR QUANTIFYING CASH FLOW RECOVERY AND RISK
PROCEDES ET SYSTEME DESTINES A QUANTIFIER LE RISQUE ET LA RECUPERATION DE
FONDS**

Patent Applicant/Assignee:

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Legal Representative:

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Patent and Priority Information (Country, Number, Date):

Patent: WO 200150314 A2 20010712 (WO 0150314)

Application: WO 2000US34669 20001220 (PCT/WO US0034669)

Priority Application: US 99173843 19991230; US 2000736782 20001214

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AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH
GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN
MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR
(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW
(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 13531

Fulltext Availability:
Detailed Description

Detailed Description

... the seller of assets wants to optimize the value of the portfolio, and will sometimes group the assets in "tranches." The term "tranche" as used herein is not limited to foreign notes but...

...the time for submitting a bid is about to expire, the bidder will evaluate the loans underwritten at that time, and then attempt to extrapolate a value to the loans that have...data reduction are used in valuing the third portion.

As the process proceeds and more assets are underwritten, the number of assets in the first and second portions increase and the number of assets in the third...

...more and more defined. More specifically, the loans in the third portion are evaluated by grouping the assets into clusters based on similarity to valuations of assets in the first and second portions.

Hypothetical bids...I is a diagram IO illustrating a known process for valuing a large portfolio of assets 12 through an underwriting cycle and through to making a bid for purchasing asset portfolio 12, for example, in...

...an underwritten first portion 16 and an untouched remainder portion 18. Before any of the assets are underwritten, first portion 16 is zero percent and remainder portion 18 is one hundred percent of...

...process progresses, first portion 16 increases and remainder portion 18 decreases. The objective is to underwrite as many assets as possible before a bid is submitted for the purchase of asset portfolio. The team ...

...for bidding purposes (as described below.) As in diagram IO, underwriters be in a full underwrite 14 of individual assets in portfolio 12 to produce a fully underwritten first portion 16 of assets. Underwriters also underwrite 34 a sample ...so well known or so reliable that the assets can be quickly and reliably fully underwritten or the assets are marked to market such that there is very little variance associated with the value...any full sampling group valuation 118 required for bidding as suggested by the grouping of assets in a tranche.

The number of assets in an underwriting sample grouping can be as little as one to any number of assets. Partial sampling...

...on an ongoing, real time basis.

Supervised learning process 206 uses business rules to identify clusters of assets having common aspects for valuation purposes. Unsupervised learning process 208 uses feedback from prior data...of statistically inferred valuation 142 by correlating to established criteria 80 in database 76 on assets in fully underwritten first portion 16 and assets in sample underwritten second portion 36. Selected data 78 related to one or more assets in third portion...

...selectable by the analysts conducting the evaluation and is further described below. If the seller groups the assets, then grouping

according to seller groups or tranches is easily made and an appropriate valuation 146 developed...the best method has been employed.

In order to provide the best forecast of asset value , assets are evaluated by each method within a food chain until such time as they are valued by...not homogeneous, a method to establish the variability of cash flow recoveries is provided. Individual assets are clustered by group exposure. As much face value as possible is traditionally underwritten in the time permitted, recognizing...the encoded asset attributes in such a way so as to segment the portfolio into groups of similar assets . One such algorithm is K-means clustering.

In an example, where three asset attributes, Unpaid...sample size is derived.

Table B provides an example output from a study of a group of 20 loans , with estimated (expected) recoveries between 20% and 30% of UPB, and a range of UPB...flow diagram illustrating a process 2 1 0 for automated underwriting of segmentable financial instrument assets . First clusters of financial instruments are defined 212 by common attributes. An expert opinion 214 of value...

...selects and sets 220 the individual attributes to be used and then classifies 222 individual assets into clusters . Cluster valuation is applied 224 to each cluster asset. Using the cluster valuation, the values are...

...is then supplied to the individual asset values in credit analyst table 136 for the assets from the clusters being adjusted in procedure 40 to produce adjusted credit analyst table 140. The process is...
...underwriting, partial underwriting and inferred valuation. First, assets are sampled 242 according to risk. Second, assets are underwritten 244, and valuations recorded. Third, market value clusters are formed 246, such as by FCM, as described below. Fourth, regression models are built 248, for the underwritten assets .

A best model is selected 250, for the underwritten assets from among those built 248 earlier. Sixth, the counts for the selected models are calculated...

...a maimer weighted by the counts to predict individual values for each of the non- underwritten assets . The individual asset values produced according to process 240 are then placed in adjusted credit analyst table 140 (see Figure 3).

In sampling assets 242, underwriters use stratified random sampling to select assets for detailed review. Strata are constructed from collateral ...

...a largely manual process in which expert underwriters ascribe a notion of worth to collateral assets . The underwritten valuations are stored in a master database table, such as database 76 (shown in Figure...

...an analysis using a Classification And Regression Tree ("CART") based model, which results in a grouping of UW assets by Collateral Usage and Market Value ("CUMV") groups, using Previous Appraisal Amount ("PAA") as the...shown in Figure 3) performs this process. Model building 248 is

used to assist the underwriter in prioritizing assets for full underwriting 14 and sample-based underwriting 34, as well as for inferential valuation.

The lower portion...behavior. Unsupervised learning step 208, employs a fuzzy clustering method ("FCM") and knowledge engineering to group assets automatically for valuation. FCM is a known method that has been widely used and applied...one exemplary embodiment 25% of the assets and 60% of the face value of all assets. Full underwriting of these assets is warranted due to their size and value. However, this underwriting is fairly uniform for...

7/3,K/14 (Item 9 from file: 349)

DIALOG(R)File 349:PCT FULLTEXT

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00816784 **Image available**

RAPID VALUATION OF PORTFOLIOS OF ASSETS SUCH AS FINANCIAL INSTRUMENTS
3VALUATION RAPIDE DE PORTEFEUILLES D'ACTIFS TELS QUE DES INSTRUMENTS FINANCIERS

Patent Applicant/Assignee:

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STEWART William C, 13 Sycamore Street, Norwalk, CT 06855, US,

Legal Representative:

BENINATI John F (et al) (agent), General Electric Company, 3135 Easton
Turnpike W3C, Fairfield, CT 06431, US,

Patent and Priority Information (Country, Number, Date):

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Application: WO 2000US34668 20001220 (PCT/WO US0034668)
Priority Application: US 99173639 19991230; US 2000737454 20001214

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AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH
GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN
MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR
(OA) BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZW
(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English
Fulltext Word Count: 14781

Fulltext Availability:
Detailed Description
Claims

English Abstract

A method (32) of valuation of large groups of assets (12) by partial full underwriting (14), partial sample underwriting (34) and inferred values (40) of...

Detailed Description

... the seller of assets wants to optimize the value of the portfolio, and will sometimes group the assets in "tranches." The term "tranche" as used herein is not limited to foreign notes but...

...the time for submitting a bid is about to expire, the bidder will evaluate the assets underwritten at that time, and then attempt to extrapolate a value to the assets that have...data reduction are used in valuing the third portion.

As the process proceeds and more assets are underwritten, the number of assets with values established in the first and second portions increase and the number of assets...

...more and more defined. More specifically, the assets in the third portion are evaluated by grouping the assets into clusters having probability of value based on similarity to valuations of assets in the first and...is a diagram 10 illustrating a known process for valuing a large portfolio of assets 12 through an underwriting cycle and through to making a bid for purchasing asset portfolio 12, for example, in...

...an underwritten first portion 16 and an untouched remainder portion 18. Before any of the assets are underwritten, first portion 16 is zero percent and remainder portion 18 is one hundred percent of...

...process progresses, first portion 16 increases and remainder portion 18 decreases. The objective is to underwrite as many assets as possible before a bid is submitted for the purchase of asset portfolio. The team ...

...tranches for bidding purposes (as described below.) As in diagram 10, underwriters begin a full underwrite 14 of individual assets in portfolio 12 to produce a fully underwritten first portion 16 of assets. Underwriters also underwrite 34 a sample of assets in a second portion 36 of portfolio 12, and a...so well known or so reliable that the assets can be quickly and reliably fully underwritten or the assets are marked to market such that there is very little variance associated with the value...

...into any full sampling group valuation 118 required for bidding as suggested by the grouping of assets in a tranche.

The number of assets in an underwriting sample grouping can be as little as one to any number of assets. Partial sampling...an ongoing, real time basis.

Supervised learning process 206 uses business rules to identify clusters of assets having common aspects for valuation purposes. Unsupervised

learning process 208 uses feedback from prior data...of statistically inferred valuation 142 by correlating to established criteria 80 in database 76 on assets in fully underwritten first portion 16 and assets in sample underwritten second portion 36. Selected data 78 related to one or more assets in third portion...

...selectable by the analysts conducting the evaluation and is further described below. If the seller groups the assets, then grouping according to seller groups or tranches is easily made and an appropriate valuation 146 developed...the best method has been employed.

In order to provide the best forecast of asset value, assets are evaluated by each method within a food chain until such time as they are valued by...not homogeneous, a method to establish the variability of cash flow recoveries is provided. Individual assets are clustered by group exposure. As much face value as possible is traditionally underwritten in the time permitted, recognizing...the encoded asset attributes in such a way so as to segment the portfolio into groups of similar assets. One such algorithm is K-means clustering.

In an example, where three asset attributes, Unpaid...sample size is derived.

Table B provides an example output from a study of a group of 20 loans, with estimated (expected) recoveries between 20% and 30% of UPB, and a range of UPB...flow diagram illustrating a process 210 for automated underwriting of segmentable financial instrument assets. First clusters of financial instruments are defined 212...selects and sets 220 the individual attributes to be used and then classifies 222 individual assets into clusters. Cluster valuation is applied. 224 to each cluster asset. Using the cluster valuation, the values are...

...is then supplied to the individual asset values in credit analyst table 136 for the assets from the clusters being adjusted in procedure 40 to produce adjusted credit analyst table 140. The process is...

...underwriting, partial underwriting and inferred valuation. First, assets are sampled 242 according to risk. Second, assets are underwritten 244, and valuations recorded. Third, market value clusters are formed 246, such as by FCM, as described below. Fourth, regression models are built 248, for the underwritten assets.

A best model is selected 250, for the underwritten assets from among those built 248 earlier. Sixth, the counts for the selected models are calculated...

...a manner weighted by the counts to predict individual values for each of the non-underwritten assets. The individual asset values produced according to process 240 are then placed in adjusted credit analyst table, 140 (see Figure 3).

In sampling assets 242, underwriters use stratified random sampling to select assets for detailed review. Strata are constructed from collateral...a largely manual process in which expert underwriters ascribe a notion of worth to collateral assets. The underwritten valuations are stored in a master database table, such as database 76 (shown in Figure...

...an analysis using a Classification And Regression Tree ("CART") based model, which results in a grouping of UW assets by Collateral Usage and Market Value ("CUMV") groups, using Previous Appraisal Amount ("PAA") as the...shown in Figure 3) performs this process. 'Model building 248 is used to assist the underwriter in prioritizing assets for full underwriting 14 and sample-based underwriting 34, as well as for inferential valuation.

The lower portion...behavior. Unsupervised learning step 208, employs a Rizzy clustering method ("FCM") and knowledge engineering to group assets automatically for valuation. FCM is a known method that has been widely used and applied...one exemplary embodiment 25% of the assets and 60% of the face value of all assets. Full underwriting of these assets is warranted due to their size and value. However, this underwriting is fairly uniform for...

Claim

... 106) comprises the steps of
sampling one hundred percent (1 1 0) of a sample group of assets ;
underwriting in full (14) a portion of the sampling group of assets
based on a determined commonality within the sampling group.

7 A method (32) according to...learning process further comprises the steps of
segmenting and classifying assets; and
objectively evaluating the assets based upon underwriting or other valuation data feedback.

39

. A method (32) according to Claim 9 wherein said...

...according to Claim 13 further comprising the steps of:
dividing the second category (50) of assets into clusters (52, 54);
and
dividing the clusters into sub-clusters (56, 58, 60, 62, 64).

15...said server

(302) is configured to:
sample one hundred percent (1 10) of a sample group of assets ;
underwrite in full a portion of the sampling group of assets based
on a
determined commonality within the sampling group.

22 A system (300) according to...

...27 A system (300) according to Claim 24 wherein said server
(302) is configured to cluster assets using fuzzy-C means clustering
(FCM) and a composite High/Expected/Low/Timing/Risk (HELTR...

...Claim 28 wherein said server
(302) is configured to:
divide the second category (50) of assets into clusters (52, 54); and
divide the clusters into sub-clusters (56, 58, 60, 62, 64).

30...according to Claim 35 programmed to:
sample one hundred percent (I 10) of a sample group of assets ;
underwrite in full (14) a portion of the sampling group of assets
based
on a detennined commonality within the sampling group.

37 A computer (38) according to...upon data feedback.

46

. A computer (3 8) according to Claim 3 9 programmed to cluster assets using fuzzy-C means clustering (FCM) and a composite I-Egh/Expected/Low/Timing/Risk...

...A computer (38) according to Claim 43 programmed to:
divide the second category (50) of assets into clusters (52, 54); and
divide the clusters into sub-clusters (56, 58, 60, 62, 64).

45...

7/3,K/15 (Item 10 from file: 349)

DIALOG(R)File 349:PCT FULLTEXT

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00816782 **Image available**

METHODS AND SYSTEMS FOR OPTIMIZING RETURN AND PRESENT VALUE

PROCEDES ET SYSTEMES D'OPTIMISATION DU RENDEMENT ET DE LA VALEUR ACTUELLE

Patent Applicant/Assignee:

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Inventor(s):

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KEYES Tim K, 16 Topledge Road, West Redding, CT 06896, US,

Legal Representative:

BENINATI John F (et al) (agent), General Electric Company, 3135 Easton
Turnpike W3C, Fairfield, CT 06431, US,

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Detailed Description

Detailed Description

... the seller of assets wants to optimize the value of the portfolio, and will sometimes group the assets in "tranches." The term "tranche" as used herein is not limited to foreign notes but...

...the time for submitting a bid is about to expire, the bidder will evaluate the loans underwritten at that time, and then attempt to extrapolate a value to the loans that have...data reduction are used in valuing the third portion.

As the process proceeds and more assets are underwritten, the

number of assets in the first and second portions increase and the number of assets in the third...

...more and more defined. More specifically, the assets in the third portion are evaluated by grouping the assets into clusters based on similarity

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to valuations of assets in the first and...I is a diagram 10 illustrating a known process for valuing a

large portfolio of assets 12 through an underwriting cycle and through to making a bid for purchasing asset portfolio 12, for example, in...

...an underwritten first portion 16 and an untouched remainder portion 18. Before any of the assets are underwritten, first portion 16 is zero percent and remainder portion 18 is one hundred percent of...

...process progresses, first portion 16 increases and remainder portion 18 decreases. The objective is to underwrite as many assets as possible before a bid is submitted for the purchase of asset portfolio. The team

...

...tranches for bidding purposes (as described below.) As in diagram 10, underwriters begin a full underwrite 14 of individual assets in portfolio 12 to produce a fully underwritten first portion 16 of assets

Underwriters also underwrite 34 a sample of assets in a second portion 36 of portfolio 12, and a...so well known or so reliable that the assets can be quickly and reliably fully underwritten or the assets are marked to market such that there is very little variance associated with the value bidding as suggested by the grouping of assets in a tranche. The number of assets in an underwriting sample grouping can be as little as one to any number of assets.

Partial sampling...

...on an ongoing, real time basis.

Supervised learning process 206 uses business rules to identify clusters of assets having common aspects for valuation purposes. Unsupervised learning process 208 uses feedback from prior data...of statistically inferred valuation 142 by correlating to established criteria 80 in database 76 on assets in fully underwritten first portion 16 and assets in sample underwritten second portion 36. Selected data 78 related to one or more assets in third portion...

...selectable by the analysts conducting the evaluation and is further described below. If the seller groups the assets, then grouping according to seller groups or tranches is easily made and an appropriate valuation 146 developed...the best method has been employed.

In order to provide the best forecast of asset value, assets are evaluated by each method within a food chain until such time as they are valued by...not homogeneous, a method to establish the variability of cash flow recoveries is provided. Individual assets are clustered by group exposure. As much face value as possible is traditionally underwritten in the time permitted, recognizing...the encoded asset attributes in such a way so as to segment the portfolio into groups of similar assets. One such algorithm is Kmeans clustering. In an example, where three asset attributes, Unpaid Principal

...sample size is derived.

Table B provides an example output from a study of a group of 20 loans, with estimated (expected) recoveries between 20% and 30% of UPB, and a range of LTPB...is a flow diagram illustrating a process 210 for automated underwriting of segmentable financial instrument assets. First clusters of financial instruments are defined 212 by common attributes. An expert opinion 214 of value...

...selects and sets 220 the individual attributes to be used and then classifies 222 individual assets into clusters. Cluster valuation is applied 224 to each cluster asset. Using the cluster valuation, the values are...

...is then supplied to the individual asset values in credit analyst table 136 for the assets from the clusters being adjusted in procedure 40 to produce adjusted credit analyst table 140. The process is...partial underwriting and infer-red valuation. First, assets are sampled 242 according to risk. Second, assets are underwritten 244, and valuations recorded. Third, market value clusters are formed 246, such as by FCM, as described below. Fourth, regression models are built 248, for the underwritten assets. A best model is selected 250, for the underwritten assets from among those built 248 earlier. Sixth, the counts for the selected models are calculated...

...240 are then placed in adjusted credit analyst table 140 (see Figure 3). In sampling assets 242, underwriters use stratified random sampling to select assets for detailed review. Strata are constructed from collateral...

...a largely manual process in which expert underwriters ascribe a notion of worth to collateral assets. The underwritten valuations are stored in a master database table, such as database 76 (shown in Figure...

...an analysis using a Classification And Regression Tree ("CART") based model, which results in a grouping of UW assets by Collateral Usage and Market Value ("CUMW") groups, using Previous Appraisal Amount ("PAA") as, the...shown in Figure 3) performs this process. Model building 248 is used to assist the underwriter in prioritizing assets for full underwriting 14 and sample-based underwriting 34, as well as for inferential valuation.

The lower portion...behavior. Unsupervised learning step 208, employs a fuzzy clustering method ("FCM") and knowledge engineering to group assets automatically for valuation. FCM is a known method that has been widely used and applied...one exemplary embodiment 25% of the assets and 60% of the face value of all assets. Full underwriting of these assets is warranted due to their size and value. However, this underwriting is fairly uniform for...

7/3,K/16 (Item 11 from file: 349)

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METHODS AND SYSTEMS FOR AUTOMATED INFERRED VALUATION OF CREDIT SCORING
PROCEDES ET SYSTEMES D'EVALUATION AUTOMATIQUE INFEREES DE PERFORMANCE DE CREDIT

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(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 13997

Fulltext Availability:

Detailed Description

Claims

Detailed Description

... the seller of assets wants to optimize the value of the portfolio, and
will sometimes group the assets in "tranches." The term "tranche" as
used herein is not limited to foreign notes but...

...the time for submitting a bid is about to expire, the bidder will
evaluate the loans underwritten at that time, and then attempt to
extrapolate a value to the loans that have...

...and then use business judgment to make an inference as to the valuation
of the assets not specifically underwritten. Given the lack of
granularity on this inference, valuations are typically ascribed low
values or...data reduction are used in valuing the third portion.

As the process proceeds and more assets are underwritten, the number
of assets in the first and second portions increase and the number of
assets in the third...

...more and more defined. More specifically, the assets in the third
portion are evaluated by grouping the assets into clusters having
probability of value based on similarity to valuations of assets in the
first and...computer network schematic.

1 5 DETAILED DESCRIPTION OF THE INVENTION

- Figure 1 is a diagram illustrating a known process for valuing a
large portfolio of assets 12 through an underwriting cycle and
through to making a bid for purchasing asset portfolio 12, for example,

in...

...an underwritten first portion 16 and an untouched remainder portion 18. Before any of the assets are underwritten, first portion 16 is zero percent and remainder portion 18 is one hundred percent of...

...process progresses, first portion 16 increases and remainder portion 18 decreases. The objective is to underwrite as many assets as possible before a bid is submitted for the purchase of asset portfolio. The team ...

...for bidding purposes (as described below.) As in diagram 10, underwriters begin a full underwrite 14 of individual assets in portfolio 12 to produce a fully underwritten first portion 16 of assets. Underwriters also underwrite 34 a sample of assets in a second portion 36 of portfolio 12, and a...so well known or so reliable that the assets can be quickly and reliably fully underwritten or the assets are marked to market such that there is very little variance associated with the value...

...any full sampling group valuation 118 required for bidding as suggested by the grouping of assets in a tranche.

The number of assets in an underwriting sample grouping can be as little as one to any number of assets. Partial sampling ...on an ongoing, real time basis.

Supervised learning process 206 uses business rules to identify clusters of assets having common aspects for valuation purposes. Unsupervised learning process 208 uses feedback from prior data...of statistically inferred valuation 142 by correlating to established criteria 80 in database 76 on assets in fully underwritten first portion 16 and assets in sample underwritten second portion 36. Selected data 78 related to one or more assets in third portion...

...selectable by the analysts conducting the evaluation and is further described below. If the seller groups the assets, then grouping according to seller groups or tranches is easily made and an appropriate valuation 146 developed...the best method has been employed.

In order to provide the best forecast of asset value, assets are evaluated 15 by each method within a food chain until such time as they are...not homogeneous, a method to establish the variability of cash flow recoveries is provided. Individual assets are clustered by group exposure. As much face value as possible is traditionally underwritten in the 10 time...the encoded asset attributes in such a way so as to segment the portfolio into groups of similar assets. One such algorithm is K-means clustering.

In an example, where three asset attributes, Unpaid...sample size is derived.

Table B provides an example output from a study of a group of 20 loans, with estimated (expected) recoveries between 20% and 30% of LJPB, and a range of UPB...flow diagram illustrating a process 210 for automated underwriting of segmentable financial instrument assets. First clusters of financial instruments are defined 212 by common attributes. An expert opinion 214 of value...

...selects and sets 220 the individual attributes to be used and then classifies 222 individual assets into clusters. Cluster valuation

is applied 224 to each cluster asset. Using the cluster valuation, the values are...

...is then supplied to the individual asset values in credit analyst table 136 for the assets from the clusters being adjusted in procedure 40 to produce adjusted credit analyst table 140. The process is...
...underwriting, partial underwriting and inferred valuation. First, assets are sampled 242 according to risk. Second, assets are underwritten 244, and valuations recorded. Third, market value clusters are formed 246, such as by FCM, as described below. Fourth, regression models are built 248, for the underwritten assets.

A best model is selected 250, for the underwritten assets from among those built 248 earlier. Sixth, the counts for the selected models are calculated...

...a manner weighted by the counts to predict individual values for, each of the non-underwritten assets. The individual asset values produced according to process 240 are then placed in adjusted credit analyst table 140 (see Figure 3).

In sampling assets 242, underwriters use stratified random sampling to select assets for detailed review. Strata are constructed from collateral...

...a largely manual process in which expert underwriters ascribe a notion of worth to collateral assets. The underwritten valuations are stored in a master database table, such as database 76 (shown in Figure...)

...an analysis using a Classification And Regression Tree ("CART") based model, which results in a grouping of UW assets by Collateral Usage and Market Value ("CUMV") groups, using Previous Appraisal Amount ("PAA") as the...shown in Figure 3) performs this process. Model building 248 is used to assist the underwriter in prioritizing assets for full underwriting 14 and sample-based underwriting 34, as well as for inferential valuation.

The lower portion...behavior. Unsupervised learning step 208, employs a fuzzy clustering method ("FCM") and knowledge engineering to group assets automatically for valuation. FCM is a known method that has been widely used and applied...one exemplary embodiment 25% of the assets and 60% of the face value of all assets. Full underwriting of these assets is warranted due to their size and value. However, this underwriting is fairly uniform for...

Claim

...ther comprising the steps of- inputting clusters into the table, where clusters are defined as groups of assets that are characterized and segmented by their descriptive attributes;
inputting individual cluster recovery and credit...configured to:
upload and store clusters within the table (136), where clusters are defined as groups of assets that are characterized and segmented by their descriptive attributes;
upload and store individual cluster recovery...programmed to:
upload and store clusters within the table (136), where clusters are defined as groups of assets that are characterized and segmented by their descriptive

attributes;
upload and store individual cluster recovery...
?